Proceedings of the Fábos Conference on Landscape and Greenway Planning

Volume 3
Issue 1 *Proceedings of the Fabos Conference on Landscape and Greenway Planning 2010*

Article 12

2010

Urban greenways planning. A vision plan for Milan (Italy)

Giulio Senes
University of Milan, Department of Agricultural Engineering

Natalia Fumagalli
University of Milan, Department of Agricultural Engineering

Alessandro Toccolini
University of Milan, Department of Agricultural Engineering

Urban greenways planning. A vision plan for Milan (Italy)

Giulio Senes, Natalia Fumagalli, Alessandro Toccolini
University of Milan, Department of Agricultural Engineering

Greenways are "green infrastructure" to link people and places (Fabos, 1995) and can be planned at different scales (from national to municipal) and for multiple purposes, "including ecological, recreational, cultural, aesthetic" (Ahern, 1995), "to provide people with access to open spaces close to where they live" (President's Commission on Americans Outdoors, 1987), in order to "enhance both the environment and quality of life" (European Greenways Association, 2000).

At the municipal scale, the urban greenways network can help to reshape the city, making it more livable; urban greenways represent "at once the parks for the 21st century and a part of the transportation infrastructure, providing for pleasant, efficient, healthful and environmentally-sound travel by foot, bicycle or skates" (New York City Department of City Planning, 1993).

Turner (2006) reported the results of a research conducted in 2001 among the British local authorities, in which come out the different purpose of urban greenway planning: creating a coherent (green) network of public open spaces, creating a green transport network that confers a vital new use on public open spaces, contributing to the reintegration of planning for 'town' and 'country' in order to serve the needs of a new urban population seeking active recreation in the countryside.

The most important benefits of greenways in urban areas are environmental protection, recreation, and alternative transportation. These benefits cannot be realized unless the greenway planners take a systematic approach to the delineation of greenway paths (Conine et al., 2004).

Various methodologies for greenways planning that take into account the many factors in a cohesive manner have been developed for and successfully applied, such as those described in Flink and Searns (1993), Smith and Hellmund (1993), Fabos (1995), Tzolova (1995), Xiang (1996), Toccolini et al. (2004), Ribeiro and Barao (2006) and Toccolini et al. (2006).

In the present study three significant experiences were analyzed more in depth: New York City (New York City Department of City Planning, 1993), Vancouver (City of Vancouver, 1995) and Brussels (Institut Bruxellois pour la Gestion de l'Environnement, 2001).

There has always been a strong link between the city of New York and the Greenways; as a matter of fact it is right here where it was first conceived the first plan of the modern age concerning a network of urban greenways (in 1866, with the Parkways designed by Frederick Law Olmsted and Calvert Vaux). Over the years,

the great metropolis has preserved this link and recently this link has led to a plan of Greenways for the city. The plan was proposed in 1993 by NYC Department of City Planning. The plan states that "greenways would be a system of bicycle-pedestrian pathways along natural and manmade linear spaces such as rail and highway rights-of-way, river corridors, waterfront spaces, parklands and, where necessary, city streets. They are at once the parks for the 21st century and a part of the transportation infrastructure, providing for pleasant, efficient, healthful and environmentally-sound travel by foot, bicycle or skates".

The plan concerns a system of about 570 km of greenways designed to create new opportunities from a recreational point of view, increase the mobility of cyclists and pedestrians and generally speaking was created to enhance the quality of life of NY citizens. The network of greenways brings advantages in many fields, such as citizens health, transportation, socializing development and recreational aspects. As a matter of fact, the plan for NY wants greenways to accomplish different tasks:

- build new spaces that are easily reachable from home and work, through which it is possible to explore and appreciate the different metropolitan environments;
- offer recreational advantages (sunbathing, staying outdoors, admiring the landscape, relax, getting in touch with nature, etc.);
- improve people health (physical activities, outdoor sports);
- provide an alternative, completion and integration with traditional means of transportation;
- provide the possibility to decrease traffic and urban pollution;
- build natural "buffer zones" to separate areas with different functions (residential areas, commercial areas, etc.);
- represent a meeting place to socialize with other people.

The plan represents a concrete answer to the citizens growing demand of pleasant and safe paths to go to work, to go school, to go shopping, to stroll or to reach recreational areas such as beaches, parks, museums, etc., or to do physical activities.

When choosing the routes, the plan has taken into account the criteria of safety and continuity; the proposed routes must be separated from heavy traffic roads; where this is not possible, the continuity of the network is guaranteed by linkages on sidewalks or with side roads.

The plan identifies the priority routes and along with this it aims to integrate the greenways system with the existing or scheduled cycle paths and pedestrian zones.

The plan for the city of Vancouver was first presented in 1993. Its purpose was to establish guidelines in order to connect the open spaces of the city. In 1995 the city council decided to adopt officially this plan and to use it as a model to design a true City Greenways Plan.

The drawing up of Vancouver Greenways Plan has been preceded by an important phase in which citizens were first involved and consulted. From the needs emerged in that phase the main purpose of the Vancouver City Greenways Plan became the design of a network capable of linking the most important destinations and covering the whole town. This is the reason why the network has been organized on two levels, the City and the Neighborhood Greenways.

The “Green Network” aims to integrate the different types of open spaces, recover abandoned areas and facilities and guarantee a safer non-motorized mobility, making a contribution to the decrease of traffic and atmospheric pollution, increasing the sense of belonging towards the community and becoming an important element of the urban landscape that improves the look of the town.

The City Greenways conceived in the plan go through every district of the city and are within 25 minutes from houses by walking or within 10 minutes by bike (calculated on an average speed of about 4 km/h for a pedestrian and about 12km/h for a cyclist; the City Greenways are within a distance of about 1,5-2 km from houses).

The choice of the routes was designed to:

- connect destinations significant for citizens (parks, beaches, important institutions, main attractions, museums, etc.);
- show a distinctive feature (such as being on a river or on the seaside, connecting certain points of interest, etc.);
- help users to understand better the city of Vancouver;
- build a network on an urban scale.

14 City Greenways have been scheduled. They are almost 140 km long: three of them are located along the seaside, two in the town centre, five east- westwards and four north-southwards. It is planned to add to this main system a secondary level system, named Neighborhood Greenways, that would be organized by the single city districts, with the backup of the city council. They are smaller tracks, based on the needs of the city districts so as to connect places of local interest (district parks, schools, public districts and shops). They could be very different one each other, depending on length, interaction with the traffic and time needed to build them.

The region of Brussels-capital has focused over the last few years on a balanced development of the city which led to the adoption of the Plan Régional de Développement, of the “green network” ("maillage vert") (IBGE, 2001) and subsequently to the project for La promenade Verte (IBGE, 2009). The program aims to build gradually a network of green areas in the metropolitan area and, at the same time to balance the spatial distribution of the green areas. The main goals are: answer to citizens expectations, encourage the non-motorized mobility, protect the natural heritage and the biodiversity, enhance the water elements.

The green network aims to create green areas where they lack now and to connect one area to another, recovering and enhancing the "green axis" that penetrate into the urban ground, the great tree-lined boulevards, the tracks for bikes and pedestrians, the rivers and their banks, the abandoned train and steel cars routes. The objective is to create a non-stop green network both on the functional and on the spatial point of view.

The program plans the realization of 14 main green ways built on already existent tracks and on new ones.

The goal of this study is to identify the greenways network for the city of Milan which connects the green areas of the city in providing green corridors for recreation and alternative transportation.

On the basis of the indications showed in the analysis of the experiences in foreign countries (in particular the green network of New York, Vancouver and Brussels), we have planned a methodology that fits with the Italian situation and we have narrowed a Plan proposal of the Greenways for the city of Milan. It is a green network capable of connecting the green areas, the resources existing on the territory and the most crowded areas through a complex system for the slow mobility which represents, in our opinion, an important opportunity to improve the quality of life and to give a direction to the development of the city.

The methodology we have developed begins with a detailed analysis of the different existing green areas in order to establish the main functions they can present on the basis of their typological and form features. Among the many types of green, there is one that has a linear spatial conformation, with a very high proportion length/width, that we have called "green corridor". This kind of green area might have other functions, added to the ones already present in the typical green areas (recreational, social, aesthetic, microclimatic):

- a connective function, allowing the connection between the various urban open spaces and consequently allowing the realization of a real "green system";
- a function related to the mobility, playing the role of a facility originally thought for slow mobility.

Based on the methodologies found in the literature and the experiences abroad, the criteria for the Milan Greenways Plan were decided:

1. congruence with the historic city form, the plan of the green network cannot help taking into account the shape of the city and its development trend over the centuries.
2. enhancement and connection of the existing green areas and their preferential usage is considered a pillar of the Plan.
3. links to services, resources and the main points of interest,

4. enhancement of waterways, to complete the network where necessary and to revive and reorganize those elements that are considered historically and culturally interesting either.
5. hierarchical organization of the network; the plan must be divided into a main network, which connects the entire urban territory and it as available to the whole people, and a supporting network on a local scale in districts and areas.
6. homogenous coverage of the city, so as to be accessible from entire population.

The above criteria allowed us to draw out the methodology, divided in the following phases (Fig. 1).

Phase 1: identification of the basic structure of the green network. The city of Milan has suffered various expansions over the centuries. The city walls have been rebuilt many times, each time externally to the previous ones; the most known examples are the circle of Navigli and the circle of Bastioni, still visible today. The development of the city had a concentric-circle growth and the current organization of the city recalls a typical "spider web", crossed radially by the main ways of communications that allow both to enter and leave the city.

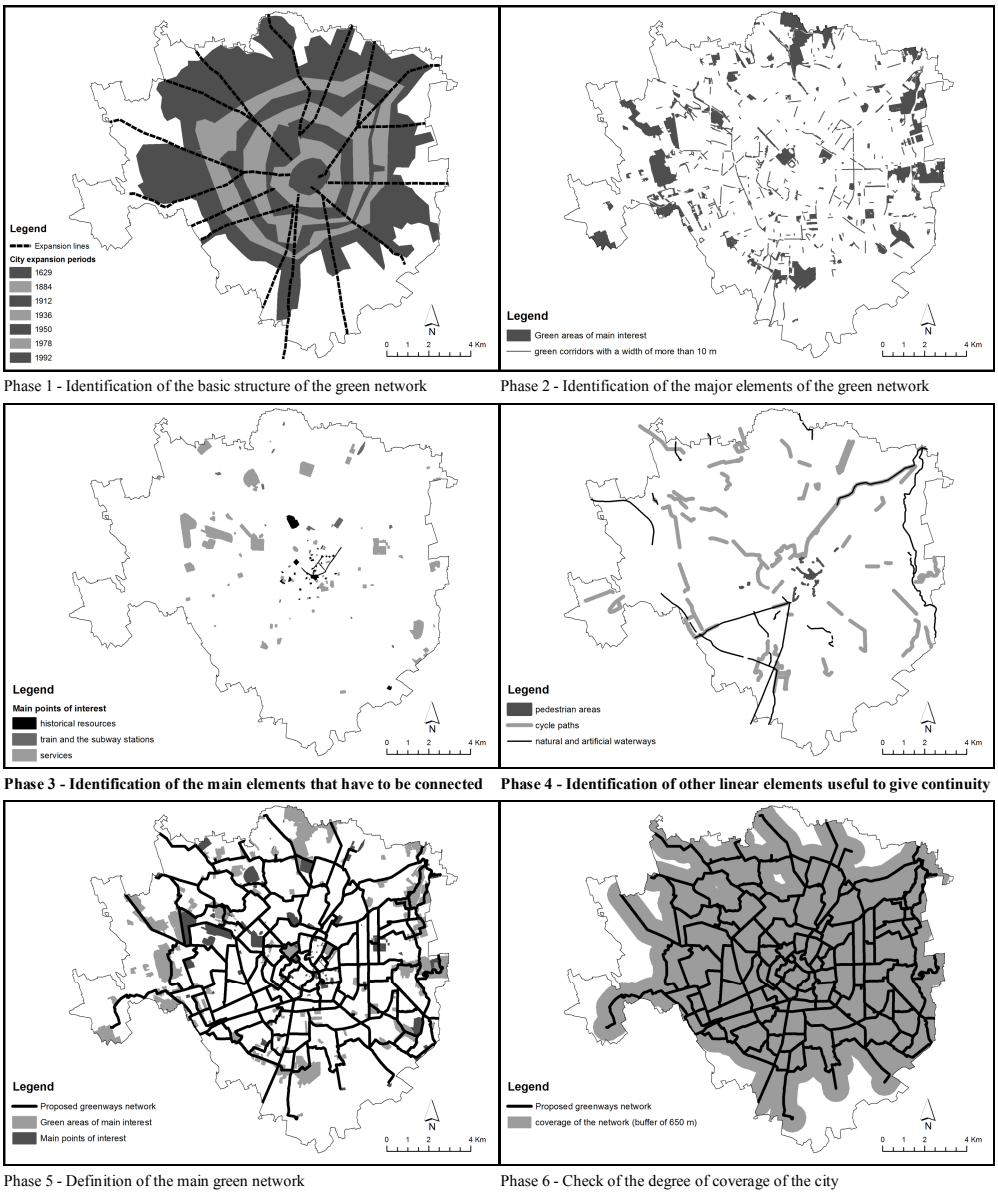
Phase 2: identification of the major elements of the green network. As we said before, the green network must be based on the existing green. To do that, it has been carried out an analysis of the characteristics, types and dimensions of the green areas. In order to create the green network, the areas taken into consideration are those named by Municipal Council as "open spaces, parks and gardens", the extensive green, the linear green, the scheduled green, the agricultural areas, the green areas not cultivated.

The green areas were then classified based on their dimensions:

- "green areas of main interest", thus all the green area (existing, extensive and scheduled) bigger than 2 ha;
- "green areas of local interest", those areas smaller than 2 ha;
- "green corridors with a width of more than 10 m"; such a width allows to intervene without big planning boundaries;
- "green corridors with a width of less than 10 m": though having dimensions that allow to create green routes, it is necessary in the design phase to analyze carefully the organization of the spaces and the elements that have to be created.

In order to design the main green network, only the green areas of main interest and the green corridors with a width of more than 10 m have been taken into account.

Phase 3: identification of the main elements that have to be connected with the green network. This phase concerns an analysis of most appealing and used resources and services that are thought to be useful if connected through the network. We have taken into consideration: the main services (main public offices, tribunal, libraries, interchange car parks, fairs), the most important historic and cultural resources, the headquarters of universities, the main health facilities (hospital, ASL, nursing homes), the train and the subway stations, the main sport centers (stadium, hippodrome, arena, "ice palace").



Phase 1 - Identification of the basic structure of the green network

Phase 2 - Identification of the major elements of the green network

Phase 3 - Identification of the main elements that have to be connected

Phase 4 - Identification of other linear elements useful to give continuity

Phase 5 - Definition of the main green network

Phase 6 - Check of the degree of coverage of the city

Figure 1. The phases of the methodology

Phase 4: identification of other linear elements useful to give continuity to the green network. Complementary elements such as cycle paths, natural and artificial waterways, pedestrian areas can be added to ensure the connectivity of the network

Phase 5: definition of the main green network. After having identified those resources and services that have to be connected to the network and the elements that might become "green routes", the following step has been that of defining the main network. This is built upon the green areas of main interest and the linear green larger than 10 m, and it is integrated – in order to ensure the continuity where such

elements are not retrievable – with waterways, green areas of local interest (green areas smaller than 2 ha and with a width of less than 10 m), cycle paths, pedestrian areas and unfarmed green.

Phase 6: check of the degree of coverage of the city. The coverage of the network on the municipal territory has been checked taking into account the maximum distance between the main network and the houses, that does not have to be more than 10 minutes on foot. Provided that the average speed for a pedestrian is about 4 km/h, the network must be located at a distance of about 650-700 m from the houses.

The definition of the supporting network follows the same procedure described for the main network. However it is important to work on a more detailed level and put in evidence all the elements that are meaningful for the citizens living in a particular district/area of the city, though these elements have less dimension/importance.

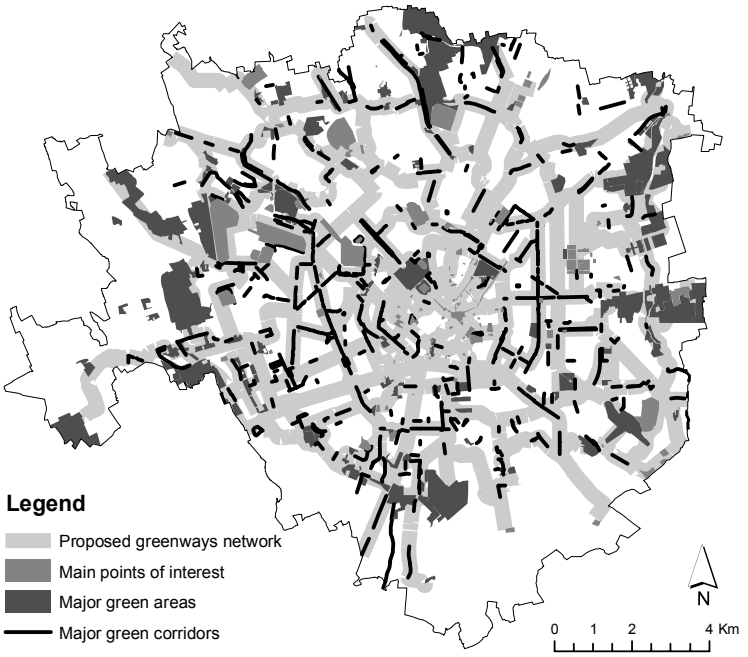


Figure 2. Urban greenways plan for Milan

The plan for Milan provides a "principal" greenways network about 275 km long (Fig. 2). Most of the network is based on existing or available corridors, although in many cases interventions are needed for improvement or construction (routes that are completely lacking amount only to 56 km). The "principal network" is based on major green areas (area> 2 ha) and green corridors (more than 10m wide), combined with water courses, minor green areas and corridors, bike paths and pedestrian areas, in order to ensure the continuity of the network. The planned greenways network provides a very good coverage, being easily accessible at any point in the city (10 minutes walk 650-700 m from houses).

The greenways network plan for Milan is the result of implementing a general methodology and applying it at municipal level. The method defined could be easily adapted in order to be applied in other places (with different local priorities and goals). There are encouraging signals that the plan can be incorporated into the city's land use plan and implemented. This "vision" plan needs to be then implemented at neighbor scale.

References

Ahern, J., 1995. *Greenways as a planning strategy*. Landscape Urban Plan. 33, 131–155.

City of Vancouver, Dept. of Community Planning, 1995. *The Vancouver Greenways Plan*. Vancouver, B.C.

Conine A., Xiang W.N., Young J., Whitley D., 2004. *Planning for multi-purpose greenways in Concord, North Carolina*. Landscape and Urban Planning 68, 271–287

Erickson, D.L., 2004. *The relationship of historic city form and contemporary greenway implementation: a comparison of Milwaukee, Wisconsin (USA) and Ottawa, Ontario (Canada)*. Landscape and Urban Planning 68, 199–221.

European Greenways Association, 2000. *Lille Declaration*. In Rever/Amno Project. Greenways for Europe. Brussels. www.aevv-egwa.org

Fabos, J.G., 1995. *Introduction and overview: the greenway movement, uses and potentials of greenways*. Landscape Urban Plan. 33, 1–13.

Flink, C.A., Searns, R.M., 1993. *Greenways: A Guide to Planning, Design and Development*. Island Press, Washington, DC.

Giordano, L.d.C., Riedel, P.S., 2008. *Multi-criteria spatial decision analysis for demarcation of greenway: a case study of the city of Rio Claro, Sao Paulo, Brazil*. Landscape and Urban Planning 84, 301–311.

Institut Bruxellois pour la Gestion de l'Environnement, 2001. *Maillage vert et bleu*. Brussels.

Institut Bruxellois pour la Gestion de l'Environnement, 2009. *La Promenade Verte*. Brussels.

New York City Department of City Planning, 1993. *Greenway Plan for New York City*. New York.

President's Commission on Americans Outdoors, 1987. *Report and recommendations*.

Ribeiro, L., Barao, T., 2006. *Greenways for recreation and maintenance of landscape quality: five case studies in Portugal*. Landscape Urban Plan 76, 79–97.

Smith, D.S., Hellmund, P.C. (Eds.), 1993. *Ecology of Greenways*. University of Minnesota Press, Minneapolis, MN.

Toccolini, A., Fumagalli, N., Senes, G., 2004. *Progettare i Percorsi Verdi* (Greenways Design), Maggioli Editore, Rimini.

Toccolini, A., Fumagalli, N., Senes, G., 2006. *Greenways planning in Italy: the Lambro River Valley Greenways System*. Landscape and Urban Planning 76, 98–111.

Turner, T., 2006. *Greenway planning in Britain: recent work and future plans*. Landscape and Urban Planning 76, 240–251.

Tzolova, G.V., 1995. *An experiment in greenway analysis and assessment: the Danube River*. Landscape Urban Plan. 33, 283–294.

Xiang,W.N., 1996. *A GIS based method for trail alignment planning*. Landscape Urban Plan. 35, 11–23.

Zhang L., Wang H., 2006. *Planning an ecological network of Xiamen Island (China) using landscape metrics and network analysis*. Landscape and Urban Planning 78, 449–456